

**Notice of Allowability**

Application No.

10/658,105

Examiner

William C. Choi

Applicant(s)

TONEY, JAMES E.

Art Unit

2873

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 2/24/2005.
2. ☒ The allowed claim(s) is/are 1-5, 8-30, 33-43 and 58.
3. ☒ The drawings filed on 09 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

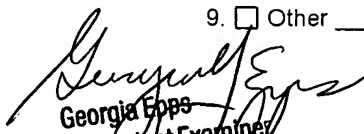
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 0405.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800

**EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James Beyer on April 26, 2005.

The application has been amended as follows:

1. In claim 1, line 14, delete "device".
2. In claim 1, line 15, delete "bandgap region of said first type" and insert therein --of said first bandgap regions--.
3. In claim 1, line 16, delete "bandgap regions of said second type" and insert therein --said second bandgap regions--.
4. In claim 1, line 21, delete "band gap regions of said second type" and insert therein --second bandgap regions--.
5. In claim 1, line 22, delete "band gap" and insert therein --bandgap--.
6. In claim 2, lines 13 and 17, delete "define" and insert therein --defines--.
7. In claim 8, line 6, delete "define" and insert therein --defines--.
8. In claim 9, line 3, delete "device".
9. In claim 10, line 3, delete "device".
10. In claim 11, line 5, delete "and" and insert therein --or--.
11. In claim 25, line 3, delete "and" and insert therein --or--.
12. In claim 30, line 3, delete "and" and insert therein --or--.

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13. In claim 33, lines 12 and 18, delete "define" and insert therein --defines--.
14. In claim 37, line 3, delete "and" and insert therein --or--.
15. In claim 38, line 4, delete "and" and insert therein --or--.
16. In claim 58, lines 1-5, delete "components configured to function as one of an optical isolator, circulator, multiplexer, demultiplexer, wavelength locker, modulator, variable attenuator, dispersion compensator, power monitor, laser, amplifier, detector, router, switch, interleaver, and combinations thereof, wherein said optical device employs at least one optical heterostructure comprising:" and insert therein --at least one optical heterostructure, said optical heterostructure comprising:--.
17. In claim 58, line 18, delete "device".
18. In claim 58, line 19, delete "bandgap region of said first type" and insert therein --of said first bandgap regions--.
19. In claim 58, line 20, delete "bandgap regions of said second type" and insert therein --said second bandgap regions--.
20. In claim 58, line 25, delete "band gap regions of said second type" and insert therein --second bandgap regions--.
21. In claim 58, line 26, delete "band gap" and insert therein --bandgap--.

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Allowed Claims: 1-5, 8-30, 33-43 and 58.

### **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance: none of the prior art either alone or in combination disclose or teach of the claimed combination of limitations to warrant a rejection under 35 USC 102 or 103.

Specifically, with respect to independent claim 1, none of the prior art alone or in combination disclose or teach of an optical heterostructure comprising a matrix and first and second bandgap regions defined by respective periodic arrangements of inclusions as claimed, specifically wherein said first and second bandgap regions alternate in succession along a primary dimension of optical propagation of said heterostructure device to define a succession including at least one of said first bandgap regions interposed between a pair of said second bandgap regions.

Specifically, with respect to independent claim 2, none of the prior art alone or in combination disclose or teach of an optical heterostructure comprising a matrix and first and second bandgap regions defined by respective periodic arrangements of inclusions as claimed, specifically wherein said first and second bandgap regions alternate along a primary dimension of optical propagation of said heterostructure device to define a plurality of first bandgap regions and a plurality of second bandgap regions.

Specifically, with respect to independent claim 33, none of the prior art alone or in combination disclose or teach of an optical waveguide comprising a core region defining a primary dimension of optical propagation bounded by a boundary region as claimed, specifically wherein said core region defines a heterostructure region

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comprising a first and second bandgap regions, centered at different wavelengths, defined in a matrix and are characterized by periodic arrangements of first and second inclusions respectively in said matrix.

Specifically, with respect to independent claim 58, none of the prior art alone or in combination disclose or teach of an optical device comprising at least one heterostructure comprising a matrix and first and second bandgap regions defined by respective periodic arrangements of inclusions as claimed, specifically wherein said first and second bandgap regions alternate in succession along a primary dimension of optical propagation of said heterostructure device to define a succession including at least one of said first bandgap regions interposed between a pair of said second bandgap regions.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **CONCLUSION**


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Scalora (U.S. 6,396,617 B1) and Atanackovic et al (U.S. 6,858,864 B2) are being cited herein to show optical heterostructures comprising some of the structural limitations of that of the claimed invention, but do not specifically disclose said first bandgap region type interposed between a pair of second bandgap region type as claimed.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (571) 272-2324. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
William Choi  
Patent Examiner  
Art Unit 2873  
April 21, 2005

  
Georgia Epps  
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